

**IN THE CLAIMS:**

1. (currently amended) An X-ray apparatus which includes;  
\_\_\_\_\_ an X-ray source (2) for the emission of a conical X-ray beam;  
\_\_\_\_\_ ~~and~~ an X-ray detector (3) for the multiple detection of the X-rays after  
their passage through an object to be examined, being arranged along an object axis (4),  
while the X-ray source (2) and the X-ray detector (3) are displaced along a trajectory;  
\_\_\_\_\_ ~~characterized in that the apparatus includes means (12, 14, 15) for~~  
changing the position and/or the orientation of the X-ray detector (3) relative to the X-ray  
source (2); and also  
\_\_\_\_\_ a control unit (11) for displacing the X-ray source (2) and the X-ray  
detector (3) along the trajectory and for controlling ~~the position and/or, rotationally on a~~  
central axis of said beam, orientation of the X-ray detector (3) during the detection of the  
X-rays.

2. (currently amended) ~~An X-ray apparatus as claimed in claim 1~~ An X-ray  
apparatus which includes an X-ray source (2) for the emission of a conical X-ray beam  
and an X-ray detector (3) for the multiple detection of the X-rays after their passage  
through an object to be examined, being arranged along an object axis (4), while the X-  
ray source (2) and the X-ray detector (3) are displaced along a trajectory, characterized in  
that the apparatus includes means (12, 14, 15) for changing the position and/or the  
orientation of the X-ray detector (3) relative to the X-ray source (2) and also a control  
unit (11) for displacing the X-ray source (2) and the X-ray detector (3) along the  
trajectory and for controlling the position and/or orientation of the X-ray detector (3)

during the detection of the X-rays, characterized in that ~~the X ray apparatus~~ includes a flat, rectangular X-ray detector (3) which is rotatable around the connecting line (13) extending between the focal point of the X-ray source (2) and the center of the X-ray detector (3), the control unit (11) for controlling the orientation of the X-ray detector (3) being constructed in such a manner that one of the edges (31, 32) of the X-ray detector (3) is always situated at right angles to the object axis (4) while the trajectory is being completed.

3. (original) An X-ray apparatus as claimed in claim 2, characterized in that for circular trajectories the control unit (11) is arranged to adjust the orientation of the X-ray detector (3) prior to the beginning of the completion of each trajectory in such a manner that one of the edges (31, 32) of the X-ray detector (3) is situated at right angles to the object axis (4) and that the orientation of the X-ray detector (3) is kept constant while the trajectory is being completed.

4. (original) An X-ray apparatus as claimed in claim 2, characterized in that the control unit (11) is arranged to adjust the orientation in response to any change of the position of the X-ray source (2) while a trajectory is being completed.

5. (currently amended) ~~An X-ray apparatus as claimed in claim 1 or 2~~ An X-ray apparatus which includes an X-ray source (2) for the emission of a conical X-ray beam and an X-ray detector (3) for the multiple detection of the X-rays after their passage through an object to be examined, being arranged along an object axis (4), while the X-

ray source (2) and the X-ray detector (3) are displaced along a trajectory, characterized in that the apparatus includes means (12, 14, 15) for changing the position and/or the orientation of the X-ray detector (3) relative to the X-ray source (2) and also a control unit (11) for displacing the X-ray source (2) and the X-ray detector (3) along the trajectory and for controlling the position and/or orientation of the X-ray detector (3) during the detection of the X-rays, characterized in that the means (14, 15) for changing the position and/or the orientation of the X-ray detector (3) are constructed in such a manner that the angle between the central ray (16) of the X-ray beam and the connecting line (13) extending between the focal point of the X-ray source (2) and the center of the X-ray detector (3) can assume a value other than zero, and that the control unit (11) is constructed in such a manner that at least two different angular positions are adjusted during the detection of the X-rays.

6. (original) An X-ray apparatus as claimed in claim 5, characterized in that the X-ray detector (3) is arranged on one or more rails (14) in order to change its position and/or its orientation.

7. (original) An X-ray apparatus as claimed in claim 6, characterized in that in order to change its position and/or its orientation, the X-ray detector (3) is mounted on a rail (14) which extends essentially perpendicularly to the central ray (16), notably on a rail which is curved around the focal point of the X-ray source (2).

8. (original) An X-ray apparatus as claimed in claim 5, characterized in that the X-ray detector (3) is a flat, rectangular X-ray detector.

9. (original) An X-ray apparatus as claimed in claim 5, characterized in that the control unit (11) is arranged for the multiple displacement of the X-ray source (2) along a trajectory during the irradiation of the object to be examined and for the adjustment of a different angular position of the X-ray detector (3) during each completion of the same trajectory.

10. (currently amended) A method ~~offor~~ forming X-ray images, comprising:  
~~\_\_\_\_\_ emitting, by means of an X-ray apparatus, notably an apparatus as claimed in claim 1, which includes an~~ by an X-ray source, (2) for the emission of a conical X-ray beam and an X-ray detector (3) for the detection, by an X ray detector, of the X-rays after their passage through an object to be examined, being arranged along an object axis (4), while the X-ray source (2) and the X-ray detector (3) are displaced along a trajectory;  
and,  
\_\_\_\_\_ in order to maximize a reconstructable examination zone, moving, during said detection, the X-ray detector so as to off-center ~~characterized in that the position of~~ the X-ray detector from said beam and/or so as to change ~~the orientation of the X-ray detector (3) relative to the X-ray source (2) is changed during the detection of the X-rays in order to maximize the reconstructable examination zone.~~

11. (currently amended) A computer program product having a computer readable medium in to which is embodied a computer program executable by a computer to perform the method of claim 10~~with programming means for making a computer control an X-ray apparatus as claimed in claim 1 in conformity with the method claimed in claim 10 when the computer program is executed on a computer.~~

12. (new) The method of claim 10, further comprising performing said moving off-center on a track.

13. (new) The method of claim 12, wherein said track is curved to maintain the detector facing the source.

14. (new) The method of claim 10, wherein said zone is in the shape of a cylinder.

15. (new) A device for performing the method of claim 10, said device comprising said X ray source, said X ray detector, and a controller for said moving.

16. (new) The X-ray apparatus of claim 5, including a flat, rectangular X-ray detector configured for rotation around the connecting line extending between the focal point of the X-ray source and the center of the X-ray detector, the control unit for controlling the orientation of the X-ray detector being constructed in such a manner that

one of the edges of the X-ray detector is always situated at right angles to the object axis while the trajectory is being completed.

17. (new) The X-ray apparatus of claim 6, including a flat, rectangular, non-square X-ray detector configured for rotation around the connecting line extending between the focal point of the X-ray source and the center of the X-ray detector, the control unit for controlling the orientation of the X-ray detector being constructed in such a manner that one of the edges of the X-ray detector is always situated at right angles to the object axis while the trajectory is being completed.

18. (new) The X-ray apparatus of claim 7, including a flat, rectangular X-ray detector configured for rotation around the connecting line extending between the focal point of the X-ray source and the center of the X-ray detector, the control unit for controlling the orientation of the X-ray detector being constructed in such a manner that one of the edges of the X-ray detector is always situated at right angles to the object axis while the trajectory is being completed.

19. (new) The X-ray apparatus of claim 8, including a flat, rectangular, non-square X-ray detector configured for rotation around the connecting line extending between the focal point of the X-ray source and the center of the X-ray detector, the control unit for controlling the orientation of the X-ray detector being constructed in such a manner that one of the edges of the X-ray detector is always situated at right angles to the object axis while the trajectory is being completed.

20. (new) The X-ray apparatus of claim 9, including a flat, rectangular X-ray detector which is rotatable around the connecting line extending between the focal point of the X-ray source and the center of the X-ray detector, the control unit for controlling the orientation of the X-ray detector being constructed in such a manner that one of the edges of the X-ray detector is always situated at right angles to the object axis while the trajectory is being completed.